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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,113	01/21/2004	Andrew B. McNeill JR.	RPS920030182US1	3914

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EXAMINER

SUN, SCOTT C

ART UNIT	PAPER NUMBER
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2182

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/762,113	MCNEILL ET AL.	
	Examiner	Art Unit	
	Scott Sun	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment to the specification filed 4/12/2006 has been noted and entered. Previous objection to the specification has been withdrawn.
2. Applicant's amendment to the claims filed 4/12/2006 has been noted and entered. However, they are not sufficient in overcoming the U.S.C. 101 rejections. Details of the reasoning are attached below.

Response to Arguments

3. Applicant's arguments filed 4/12/2006 have been fully considered but they are not persuasive. Applicant's arguments are summarized as:
 - a. Prior art of record does not teach "limiting performance of read/write commands".
 - b. Prior art of record does not teach "whether a sufficient idles states has been monitored to avoid exceeding a duty cycle rating of the disk drive".
4. Regarding argument 'a', Examiner notes that when a disk drive is powered down, performance of commands issued to the disk drive are limited because a powered down disk drive responds slower to commands. Applicant's argues that Bajorek teaches powering down when there are no pending commands, contrary to applicant's disclosure of the invention which would require pending commands. However, it is noted that the features upon which applicant relies (i.e., pending commands) are not

recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

5. Regarding argument 'b', Examiner notes that the claim recite "avoid exceeding a duty cycle rating of the disk drive" as intended use. Likewise, the intended use of reducing duty cycle of the disk drive is taught by Bajorek (admitted by applicant page 14 of remarks). The applicant further argues that Bajorek does not teach, "that powering down of a disk drive is based on whether a duty cycle rating of the disk drive has been exceeded". However, the actual function claimed is "monitoring a number of idle states" and "limiting performance of write/read commands based on whether a sufficient number of idle states has been monitored". The claim does not require "powering down of the disk drive is based on whether a duty cycle rating of the disk drive has been exceeded", as applicant argues (page 14 of remarks). Again, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

6. Having responded to each of applicant's argument, examiner notes that prior grounds of rejection are still applicable to the currently amended claims. Minor changes are made in response to the amendments.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 1-9, 19, 20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the claim limitations are functional descriptive material (computer program or logic), per se, and do not necessarily include hardware components for performing the functions. It is suggested that the claims be amended to recite that the steps are performed by the disk drive controller as in claims 10-18.

9. To expedite a complete examination of the instant application, the claim(s) rejected under 35 USC 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 10, 11, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Bajorak et al. (US Patent #5,544,138).

12. Regarding claim 1, Bajorak discloses a computer implemented method (figure 13) comprising: monitoring a number of idle states and busy states in a disk drive (step

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120); and limiting performance of read/write commands by the disk drive (power down, column 10, lines 33-35) based on whether a sufficient number of idle states has been monitored (column 10, lines 14-21, 24-28) to avoid exceeding a duty cycle rating of the disk drive (column 1, lines 24-29). The examiner asserts Bajorak teaches "limiting the performance of read/write commands by the disk drive" because a powered down drive responds slower to read/write commands. The examiner also asserts that Bajorak teaches "based on whether a sufficient number of idle states has been monitored" because each idle state causes an adjustment to a register value which is compared to a threshold in determining whether the disk drive should be powered down. The examiner further asserts that Bajorak teaches "avoiding exceeding a duty cycle rating of the disk drive" because Bajorak states explicitly reducing power also reduces the duty cycle of the disk drive.

13. Regarding claim 2, Bajorak discloses the method of claim 1 wherein the step of monitoring further comprises utilizing a time count (register E) to track the number of idle states and busy states in a disk drive (116, 142). The examiner notes that Bajorak teaches the register value E is adjusted according to whether an operation (non-idle state) is observed, which is essentially tracking the number of idle and busy states.

14. Regarding claims 10, 11 and 19, the examiner finds these claims substantially similar to claims 1 and 2, therefore the same arguments are used. Specifically, claims 1, 10 and 19 are similar; claims 2 and 11 are similar.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 3, 4, 6, 7, 12, 13, 15, 16 are rejected under 35 U.S.C. 103(a) as being obvious over Bajorak.

17. Regarding claim 3, Bajorak discloses claim 2 but does not disclose expressly incrementing the time count by a first value for each idle state. However, Bajorak discloses decrementing the time count by a first value (figure 13, decrementing E by B11 in step 116) for each idle state. The examiner asserts that incrementing the time count is a design choice that is obvious over Bajorak because counting up to a threshold is equivalent to counting down to a mirror threshold as both accomplish the same result. For example, counting up to a threshold T in step sizes of X is equivalent to counting down to -T in step sizes of X.

18. Regarding claim 4, Bajorak discloses claim 3, but does not disclose expressly decrementing the time count by a second value for each busy state. However, Bajorak discloses incrementing the time count by a second value (incrementing E by Eopj in step 142) for each busy state. The examiner makes the same argument as above in asserting that counting up to a threshold is equivalent to counting down to a mirror threshold. The examiner further asserts then when different step sizes for incrementing and decrementing are used, the reversed counting cited above is still equivalent. For

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example, suppose a system has a threshold T , with step sizes $X1$ for incrementing (towards T if T is positive) and $X2$ for decrementing (away from T). This is equivalent to a system with a threshold of $-T$, with step sizes of $X1$ for decrementing (towards $-T$) and $X2$ for incrementing (away from $-T$).

19. Regarding claim 6, Bajorak discloses claim 2 but does not disclose expressly determining whether the time count has an accumulated value that is greater than zero. However, Bajorak discloses determining whether register value E (associated with time count) has an accumulated value that is greater than $Et1$ (step 122). The examiner asserts that the values zero and $Et1$ are design choices that are equivalent and obvious variations of each other. One of ordinary skill in the art at the time of invention would easily convert a system with a non-zero threshold to a system with zero being the threshold by subtracting the non-zero threshold from the initial start value. For example, a system with a threshold of N (N does not equal zero) can be converted to a system with a threshold of zero simply by subtracting the starting value by N . So Bajorak's system can be easily converted into a functionally equivalent system in which the threshold is zero by subtracting the initial value by the original threshold of $Et1$.

20. Regarding claim 7, taking into consideration the previous arguments made for incrementing, decrementing, and having a threshold of zero, examiner asserts that the system disclosed by Bajorak would be in active mode if E is greater than the threshold, which stated above can be easily adjusted to zero, therefore read/write command would be performed.

21. Regarding claims 12, 13, 15, and 16, the examiner finds these claims substantially similar to claims 3, 4, and 6. Therefore the same arguments are applied.

22. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being obvious over Bajorak in view of Hetzler (US Patent # 5,682,273).

23. Regarding claim 5 and 14, Bajorak discloses claims 4 and 13 but does not disclose expressly first and second values are selected according to a target duty cycle for the disk drive. However, Hetzler discloses selecting a first value (time window) and a second value (number of accesses) to provide a ratio according to a target duty cycle ratio (access frequency) for a disk drive (step 305, figure 4; column 7, lines 26-29; column 8, lines 27-40). Teachings of Bajorak and Hetzler are from similar field of disk drives, and specifically in power conservation.

24. Therefore it would have been obvious at the time of invention to combine Bajorak's teachings and Hetzler's teachings by using the frequency computing technique disclosed by Hetzler to control the mode switching of the disk drive system disclosed by Bajorak for the benefit of adjusting mode of the disk drive system according to user demands (column 2, lines 15-23).

25. Claims 17, 18 are objected to because of their dependency on the above rejected claims.

Allowable Subject Matter

26. The following is a statement of reasons for the indication of allowable subject matter: claims 17, 18 recite, inter alia, a method/apparatus/product recited in the parent claims, and also "delaying performance of a read/write command until the accumulated value is greater than zero". Prior art of record do not teach or suggest, either alone or in combination, the aforementioned limitation, nor would it be obvious to modify those references to include such limitation.

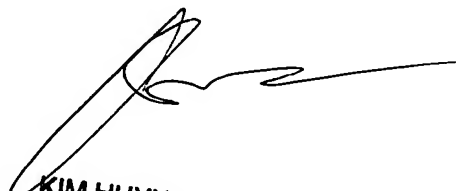
27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Sun whose telephone number is (571) 272-2675. The examiner can normally be reached on M-F, 10:30am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim N. Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS
6/24/2006



KIM HUYNH
SUPERVISORY PATENT EXAMINER
6/27/06